

NOTE ON THE MATING BEHAVIOR OF THE CIGARETTE BEETLE (*LASIODERMA SERRICORNE* (F.): ANOBIIDAE)¹

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This paper reports research undertaken at the US Army Natick (Mass.) Laboratories and has been assigned No. TP-861 in the series of papers approved for publication. The findings in this report are not to be construed as an official Department of the Army position.

Specific mating behavior is important in insect biology because of its relationship to speciation, species isolation, and species recognition (Alexander, 1962, 1964, Lloyd, 1966a, 1966b, and Wojcik, 1969a). A knowledge of mating behavior is also important in the application of sex attraction and sterilization control methods. According to Wojcik (1969b), characteristic mating behavior has been described in less than 0.1% of the 250,000 known species of Coleoptera.

This paper deals with the mating behavior of the cigarette beetle, *Lasioderma serricorne* (F.). Observations are presented on the basic features of courtship activities of virgin males when placed in observation chambers containing virgin females, and of preliminary methods for collection of a probable pheromone secreted by adult females.

MATERIALS AND METHODS.—The rearing medium consisted of equal parts of corn meal and white flour which were autoclaved, then 5% brewer's yeast was added. *Ca.* 200 adults were placed in a 1 qt. jar 1/3 full of tightly packed medium. Pupae were obtained after *ca.* 4 weeks, removed from their cocoons, sexed, and placed in capped 3 ml shell vials and stored at 80°F and 70 ± 5% R.H. When the adults

¹Accepted for publication: December 4, 1970 [3.0086].

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had emerged, virgin adult males of various age groups were introduced into observation chambers containing virgin females. The criteria for observation of the characteristic courtship and mating behavior included: 1) time spent searching for the virgin female by the virgin male, 2) characteristic movement patterns of both sexes, 3) time spent in copulation, and 4) length of time that females were attractive to virgin males. The data obtained were based on forty-nine matings.

RESULTS AND DISCUSSION.—The amount of time spent locating the virgin female by the virgin male was relatively short; less than 60 sec. and usually 27 sec., except for antennectomized males. The time antennectomized males took to locate the females was long and variable and only two out of ten copulated successfully.

The receptive female did not move away when investigated by the male. The male mounted the female *a posteriori*, clasped the anterior lateral margins of the female's prothorax with his prothoracic tarsi and executed one or more preliminary copulatory movements. During these movements, the genitalia were extended, rotated 180° and inserted in less than 15 sec. After insertion, the male dismounted to the right of the female and assumed the characteristic end to end position. The mated pair usually remained quiescent, except for abdominal pulsations, until a few minutes before separation. Separation was accomplished by the female actively moving away and pulling the male behind her until disconnection occurred.

Time spent in copula usually lasted more than 1 hour. Length of copulation was defined as that time spent from the beginning of the end to end position until separation. This average time was 73.8 minutes. The shortest and longest times were 47 minutes and 104 minutes, respectively.

Females were attractive to males prior to their first mating and after each oviposition, but not during the intervening time. Males were capable of mating every 24 hours and usually mated no more than 8 times before dying. The longevity of the adult insects was ca. 16 days for males and 20 days for females. Females usually mated after each oviposition and mated no more than 4 times.

Evidence of a sex pheromone was suggested by the quick locating time (15 seconds) of females by the males in observation chambers previously used for matings, and by the characteristic behavior of antennectomized males. Additional evidence was obtained utilizing the

method of Burkholder and Dicke (1966) by passing air over 1000 females and recovering an attractive substance on 12.7 mm. diameter assay discs. The discs were attractive to virgin males as indicated by their movements towards it, attempts to mate with each other, and by frequent extensions of their genitalia.

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2.0086. Note on the mating behavior of the cigarette beetle (*Lasioderma serricornis* (F.): Anobiidae).

ABSTRACT.—Males locate virgin females in 60 sec. or less, suggesting the presence of pheromones in rearing medium. Time in copula usually lasted more than 1 hr.—EDWARD N. TOBIN and LAWRENCE W. SMITH, JR., *Applied Entomology Group, U.S. Army Natick Laboratories, Natick, MA 01760*.

DESCRIPTIONS: Coleoptera; Anobiidae; *Lasioderma serricornis*; cigarette beetle; mating behavior.